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ABSTRACT

This paper outlines several "tricks" that aid students in improving their memories. The distinctions between operational and figural thought processes are noted. Operational memory is described as something that allows adults to make generalizations about numbers and the rules by which they may be combined, thus leading to easier memorization. Repetition, rhythm, rhyme, and imagery are described as a few of the elements of figural memory and as the keys to memory tricks. The peg system of memory, which requires a student to make an association between two lists, is explained as an excellent method for memorizing numbers and facts. Other techniques of memorization are described, including the keyword method (making something to be remembered as silly or unusual as possible); cartooning (drawing details to be remembered in an unusual fashion); and the link system (making a chain of the information to be remembered). (PAS)

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MEMORY MAGIC

Running title: Memory magic

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A discussion paper presented to the Working Group on the Psychology of Learning in Academic Settings.

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MEMORY MAGIC

When asked to comment on their most pressing reading problem, college students will frequently cite "memory." Indeed, the most frequently heard statement in the reading clinic is, "I just can't remember what I've read." This problem of recall is not limited to college students of course, individuals of all ages share in the desire to improve and strengthen their powers of recall. However, by virtue of the heavy demands placed upon them i.e. reading, classes, etc. students are keenly aware of their limitations. They are so aware of their limitations and the demands of school that books on memory improvement are among the most difficult for booksellers to keep in stock.

Despite the obvious demand for courses that would help students develop effective memory stratagies, there are very few such courses on the books. One of the reasons must surely be our own lack of expertise in this area. From personal experience, books such as those by Lorayne and Lucas (1974) are useful as basic texts. However, a text without support is more likely to be a source of frustration rather than informaton. Students seem to benefit most from instruction

that explains the "tricks" for memory improvement. This paper will outline a working hypothesis for these tricks and illustrate a few applications.

OPERATIONAL AND FIGURAL THOUGHT

Piaget and his associates (Furth, 1969; Inhelder, 1976; Piaget and Inhelder, 1973) have provided us with a powerful explanation of the mechanisms for many memory tricks. These researchers make a distinction between Operational and Figural thought processes. To illustrate this distinction, let us consider two students: one five years old in kindergarten; the other 25 years old in graduate school. We ask of them the question "How much is 3 + 5?" The kindergarten student responds by saying "3 + 5 is 8." We then ask "How much is 5 + 3?" and "4 + 4?" and "2 + 6?" The child responds to each with "I don't know." A little later in the day we return to this student and ask "How much is 3 + 5?" Now the response is "I forgot?" In contrast, the graduate student can not only answer the original question, but any corollary questions as well.

Clearly, the child has memorized an answer to a specific question; the inability of the child to see that 3 + 5 = 5 + 3 is an indicator of this. But what of the adult? What has

the adult memorized? It is impossible for the adult to have memorized all possible number combinations. What the adult has done is to have made some generalizations about numbers and the rules by which they may be combined, and these -- the rules and generalizations -- are what is stored in memory. This then is the most outstanding feature of Operational Memory: it is dynamic in character.

Figural Memory has a superficially dynamic character. With Figural Memory, we seize upon one element of a situation (frequently a configurational element, hence its name "Figural") to the exclusion of other and perhaps more significant elements. This distortion is unnoticed by the child; the adult can not only notice these distortions but deliberately create them with impressive results. One of the most frequently used distortions is simple repetition, indeed ordinary language makes a distinction between memorizing and rote memorization. The use of a configurational element, perhaps a rhyme or tune, can be combined with repetition to good effect. (Try saying the alphabet without the tune!) Repetition, rhythm, rhyme, and imagery are a few of the elements of Figural Memory and the keys to many memory tricks.

PEG SYSTEM

A common problem for many students is remembering numbers

and facts. The first thought that enters their minds about a history class, for example, is the problem of remembering dates and events and somehow correlating the two. The reasons for this ~~is~~ are first, the information is not of personal interest, and second, there is nothing unusual about the date that would tie the fact to it. History, for these students, is truly "just one damn thing after another."

We can remember a date and event through one of two methods: either by letting it touch our emotions, or by creating an unusual and interesting correlation between the two. For example, most people will easily remember that President Kennedy was assassinated in 1963 because the event touched their emotions. But few people will find the fact that the Vikings invaded Normandy in 1066 easy to commit to memory. The trick to remembering a fact like this is to make it unusual to the point of being interesting.

A teacher can easily point out to students that the human mind works quite naturally this way. We can recall the unusual custom made car we saw on the road this morning but none of the other cars. We will remember a funny scene in a movie for quite some time but anything else that didn't stand out and grab our attention will be quickly forgotten. The fact that unusual items capture our memory is, for our students,

is a readily identifiable reality, and it makes the Peg System more comprehensible.

The Peg System requires the student to make an association between two lists. The first list, the pegs, remain invarriant regardless of the content to be memorized. The second list is the content to be memorized. The pegs of the system can be any sequential arrangement of objects; most systems use numbers (Lorayne and Lucas, 1974; Scientific American, 1957), but anything that can be arranged into one invarriant sequence will do.

Numbers by themselves mean very little. In the company of others, they are confusing. The "trick" of the Peg System is to convert them into meaningful sentences. While a demonstration of this technique is impressive ("Tell me a page of the newspaper and I'll tell you what's on that page!"), we should not forget that part of the power of this technique is the fact that the students create the sentences and tailor them to fit their own interests.

Each number 0 through 9 has a corresponding letter (see Figure 1). To make words out of numbers the student will add vowels, preposition, and/or endings. All other letters not in the list are used to help make up words and sentences as well.

Insert Figure 1

about here

Consider the number 4161: the 4 converts to R, the 1 to D or T; and the 6 to J,F, or G. 4161 could convert to RDJT, which when you add vowels to it would make A RED JET. An improtant rule to member is that you use the sounds that the letters represent. For example, the word CAR would be 74. The student must remember that the number 7 stands for the sound represented by K. By doing this the number 6 could also represent PH.

The Peg System is a two part system. It is complex and difficult. It requires that the pegs first be committed to memory via repetition, and then that they be used to build images. A few students will find this technique instantly appealing, for those who do not we recommend three other techniques.

KEYWORD METHOD

A general rule of thumb is for the student to make anything they are trying to remember as silly or unusual as possible. The Keyword Method (Atkinson and Raugh, 1975; Bower, 1972)

capitalizes on this rule. It requires that the student distort a portion of the word to be remembered into an interesting visual image. For example, the term for the jaw bone is MANDIBLE. One way to remember this might be to think of a cannible eating a big meal and moving his jaw a lot. Or, the image of a woodpecker setting on ones shoulder and pecking hard at the large muscle there would serve as the cue for PECTORAL.

CARTOONING

For some students a helpful way of remembering details t is to simply draw them out on a paper and make the cartoon drawing unusual. This technique may work particularly well with children. Students frequently report problems keeping their attention on what they are trying to learn. A student may not be able to remember a page full of facts but if the facts involve popular characters (Ziggy,for example,seems particularly suited to this method), the information is much more readily grasped.

LINK SYSTEM

Another helpful memory trick is commonly refered to as the Link System. For this technique the student makes a

chain of the information to be remembered. For example; After filling up at the Standard Oil station, Picasso goes to the Sears store for some Wrigley's gum." This sentence contains references to four Chicago landmarks: the Standard Oil Building; the Sears Tower; the Wrigley Building; and, the Picasso sculpture.

Clearly not all memory processes are figural in nature, some are operational. Some figural memory becomes operational; certainly some of our knowledge of the alphabet remains figural as in the alphabet song, while much of it becomes operational as in our knowledge of spelling and reading. Nonetheless, students do seem to benifit from this insight into figural memory by increasing their powers of observation and by increasing their involvement with their own learning. To our students, the successful application of mneumonics is a magical trick in itself, but to us, their teachers, the student's active involvement with learning is the ultimate memory trick!

Figure 1

NUMBER/LETTER CORRESPONDENCES WITH ADDITIONAL MNEMONIC AIDS

0 = Z	Z is the first letter in zerro.
1 = T,D	T is made with one downward stroke.
2 = N	N is made with two downward strokes.
3 = M	M is made with three downward strokes.
4 = R	R is the fourth letter in "four".
5 = L	L is made by holding the thumb at right angles from the remaining four fingers.
6 = J,F,G	J is 6 backwards.
7 = K	K is made with two sevens.
8 = B	B and 8 look alike.
9 = P	P is 9 backwards.

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